

8th June, 1960.

COCOM Document 3715.21/6

COORDINATING COMMITTEERECORD OF DISCUSSIONONNETHERLANDS PROPOSAL CONCERNING THE INTERPRETATION OF ITEM 1521(d)- D.C. AMPLIFIERS23rd May, 1960

Present: Denmark, France, Germany, Italy, Japan, Netherlands, United Kingdom, United States.

References: COCOM Docs. Nos. 3715.21/2, 3, 4 and 5.

1. The CHAIRMAN drew the Committee's attention to the Netherlands Memorandum concerning the interpretation of Item 1521(d) and referred to the Memorandum submitted by the United Kingdom Delegation (COCOM Doc. 3715.21/2), the ensuing discussion (COCOM Doc. 3715.21/4) and the German statement (COCOM Doc. 3715.21/4) in this connexion. He asked the United Kingdom Delegate if he was in a position to suggest a redefinition of Item 1521(d), as requested by the Netherlands Delegation.
2. The UNITED KINGDOM Delegate stated that it was clear from the discussions which had already taken place that little harm was at present being done from the strategic point of view. He agreed with the Netherlands Delegation, however, that the situation was somewhat confused and that a redefinition was highly desirable. His authorities had not as yet made any suggestion, and the Delegate believed that the matter could best be settled with the help of experts. He therefore suggested that the matter be deferred until the autumn, when experts would be available for the List Review. The Netherlands authorities had further invited his Delegation to differentiate between a "vibrating condensor" and a "chopper type amplifier". He had been instructed to state that, in the simplest terms, a chopper type amplifier had a low input impedance resulting in a fast response, while a vibrating-reed condensor had a high input impedance resulting in a slow response. The United Kingdom authorities for their part regarded all chopper type amplifiers meeting the terms of sub-item 1521(d) as under embargo.
3. The NETHERLANDS Delegate thanked his United Kingdom colleague for the information he had just supplied. He was ready to agree to the latter's suggestion to postpone discussion until the next List Review.
4. The ITALIAN Delegate stated that he too could agree in principle to postpone discussion until the autumn. He had been instructed to state that his authorities were in full agreement with the German Delegate's statement as recorded in COCOM Doc. 3715.21/4. This did not, however, prejudice their position as to the equipment just described by the United Kingdom Delegate.
5. The FRENCH Delegate stated that his Delegation had studied the problem very thoroughly, and had found that the German statement in COCOM Doc. 3715.21/4 went a long way in clarifying the situation as regards the definition, which lent to confusion. For their part, they would not wish to postpone the matter until the autumn. In the view of the French experts, three types of instruments with different characteristics had been confused. As far as electrometers were concerned, the French authorities did not think that simple power-measuring equipment should be embargoed, since certain types had been in use for 70 years. Moreover in exploiting electronic tubes, equipment had been

developed which was capable of measuring direct and alternating current. If the input power needed to operate an electrometer were calculated, it might reach 10^{-16} watts, i.e. the power indicated in Item 1521(d). However, such electrometers did not have amplifiers in the strict sense of the term. With a high input voltage, electronic tubes served to operate a sensitive indicator usually having a low resistance. On the other hand, there were amplifiers not associated with electrometers requiring only a very low input power. Amplifiers of the type indicated in Item 1521(d) were of the standard type used on analogue computers and were under embargo on account of their gain, their low noise level and their drift. This type of amplifier was defined satisfactorily. There were, however, other ways of measuring direct voltages with amplifiers having the same characteristics. Such amplifiers were produced by converting direct input current into alternating current and by using the principle of alternating amplifiers which were easier to produce, and the use of a low bandwidth made it possible to reduce the noise level and zero drift. For this purpose, use could be made either of a vibrating condenser or of a "mechanical modulator" (chopper). The Delegate did not think, however, that this modulator was capable of reaching the noise level indicated in Item 1521(d), whereas a ring modulator could approach such values. In conclusion, the Delegate felt that the type of amplifier to be covered should first be clearly defined, and that a separate sub-item might be drawn up for amplifiers with no reference to power-measuring equipment.

6. The UNITED STATES Delegate stated that he could agree to postpone discussion until the autumn, if the Committee so desired. He thanked the United Kingdom Delegation for the information supplied and undertook to study the technical data provided by the French Delegation. Turning to the German statement in COCOM 3715.21/4, the Delegate requested a clarification thereof. Specifically did this statement refer only to German electrometers as the United States Delegate had understood, or did it mean, as stated in the final sentence of the German statement, that no electrometers fell under embargo by virtue of Administrative Principle No. 3? The Delegate also enquired what interpretation the Italian and French Delegates placed on the German document when they said that they supported it.

7. The GERMAN Delegate was also fully prepared to postpone discussion until the List Review, and would be unable to discuss the matter without a concrete redefinition proposal. He thanked the French Delegate for the technical comments made and undertook to study them attentively. As to his United States colleague's question, he could not say whether any German electrometers were covered by the embargo rules. The German authorities held the view that normal electrometers with D.C. amplifiers would not use those of the type described under Item 1521(d), and would therefore be free from embargo. However, electrometers using amplifiers as defined under Item 1521(d) would be regarded as under embargo by virtue of Administrative Principle No. 3.

8. The ITALIAN Delegate agreed with certain of his colleagues as to the difficulty of discussing such a technical matter without expert help. After listening to the German Delegate's last remarks, he believed that these were the grounds on which his authorities had reached their conclusion. He undertook to seek further advice in this respect.

9. The FRENCH Delegate, replying to his United States colleague, stated that it was possible that some electrometers might have a noise level, referred to the input circuit, of 10^{-16} watts. Electrometers used a scale-type measuring instrument, however, and such instruments only required a signal/noise ratio of 10^{-3} . Thus electrometer amplifiers having an indicator were not caught by Item 1521(d). The French Delegation therefore held the same view as the German Delegation, but for different technical reasons. In conclusion, the Delegate stated that, in view of the complexity of the matter, his Delegation were also ready, like the majority of their colleagues, to postpone discussion until after the recess.

10. The COMMITTEE agreed to adjourn its discussion until the next List Review in the autumn, unless a redefinition proposal were submitted in the meantime.

C O N F I D E N T I A L

9th June, 1960.

CORRIGENDUM TO
COCOM Document 3715.21/6

(English Only)

COORDINATING COMMITTEE

C O R R I G E N D U M T O

RECORD OF DISCUSSION

CN

NETHERLANDS PROPOSAL CONCERNING THE INTERPRETATION OF ITEM 1521(d)

- D.C. AMPLIFIERS

Paragraph 1. Line 4. Change "COCOM Doc. 3715.21/4" to read "COCOM Doc. 3715.21/3"

Line 5. Change "CCCOM Dec. 3715.21/5" to read "CCCOM Dec. 3715.21/4"

C O N F I D E N T I A L

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